

For: USE OF NON-MAGNETIC PATHS FOR AN ELECTRONIC MODULE INTENDED FOR A TIMEPIECE

APPENDIX B - Declaration of Yves Guérin Under Rule 1.132

Optimization of magnetic influences from the components surrounding the generator of E35.111 calibre

This shows tests on the influence of various components surrounding the generator on friction applied to the generator. The friction values represent the average of five measures on a movement in a flat position. Measures have been implemented with a Ugimag 650/600 magnet which means a strong magnet.

For each element, it is specified if the material used is magnetic (mag) or non magnetic (N/mag).

"w/o" means "without"

"Ac" means "steel" (Acier in French).

"CuBe" means "Beryllium Copper" (Cuivre-Béryllium in French)

"Arcap" is a non-magnetic alloy of copper, nickel, zinc and tin.

Trial n°	Printed circuit		PC screws		Bar screws		Plate bar		Jumper spring		Jumper screw		Winding mechanism		Rotor bearings		Dial-train bar		Dial-train bar screws		friction in flat position 5.33 Hz
	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	mag	N/mag	
1	X		x		x			x	x		Ac			w/o		w/o		w/o		w/o	25.2 nNm
2		X	X		X			X	X		Ac			w/o		w/o		w/o		w/o	6.6 nNm
3		X	X		X			X		w/o	Ac			w/o		w/o		w/o		w/o	6.2 nNm
4		X	X		X			X		X		stainless		w/o		w/o		w/o		w/o	6.2 nNm
5		X	X		X			X	X		stainless		w/o		w/o		w/o		w/o		6.4 nNm
6		X	X		X			X	X		stainless		w/o		w/o		w/o		w/o		6.4 nNm
7		X	X		X			X		X		stainless		w/o		CuBe		w/o		w/o	6.4 nNm
8		X	X		X			X		X		stainless		w/o	Ac			w/o		w/o	10.5 nNm
9		X	X		X			X		X		stainless	Ac			CuBe		w/o		w/o	6.7 nNm
10		X	X		X			X		X		stainless	Ac			w/o		w/o		w/o	6.4 nNm
11		X	X		X			X	X		Ac		Ac			w/o		CuBe		Arcap	6.2 nNm
12		X	X		X			X	x		Ac		Ac			w/o	Ac			Arcap	6.3 nNm
13		X	X		X			X		w/o		w/o		w/o		w/o		w/o		w/o	6.2 nNm
14		X	X		X			X	Ac		Ac		Ac			CuBe	Ac			Arcap	6.6 nNm